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MPL TECHNICAL MEMORANDUM 236

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LRAPP BEAMFORMER

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The 48 post-amplifiers have a gain range of 75 dB, adjustable in 5 dB steps by either computer programming or manually. The inputs can be either high impedance single ended or transformer coupled.

The detected beam scan output is a 4 msec accumulation of 1024 detected samples of each beam. Thus the time required for one complete scan is 4 msec times the total number of beams as determined by the beam-former mode of operation. This data is formatted for writing on the time-bearing recorder. A 10 minute mark is automatically written on the paper margin; manually energized beam calibrate marks and event marks are provided.

Also available as an output is the 12-bit undetected beam data in blocks of 1024 samples per beam. This is formatted for magnetic tape recording and the spectral analysis equipment. The limited frequency response of these units, requires that only every sixteenth beam is presented, one of which in turn, is sacrificed to permit recording of each single time-averaged beam scan. At appropriate intervals, days, hours, minutes and seconds, time data are written on the magnetic tape. This data is generated by a digital clock provided with the beamformer, and represents relative time only.

Built into the beamformer for instrumentation purposes are two 5-inch oscilloscopes with camera, and a digital true-rms voltmeter.

The equipment is contained in one 6-foot, 3-rack bay designed for installation on R/P FLIP, and one additional 6-foot rack with or without the FLIP-bay container.

SPECIFICATIONS

ELECTRICAL

1. INPUTS:

- a. Number of channels - 1 to 48 (2 ea., DD50S conn).
- b. Impedance, single ended - $1\text{ M}\Omega$.
- c. Impedance, transformer - 600Ω .
- d. Maximum voltage - 3 V rms.
- e. Frequency band - 10-250Hz, 500Hz, 1000Hz.
- f. Sample rates - 1, 2, or 4 kHz.
- g. Gain - 0 - +75 dB in 5 dB steps

2. OUTPUTS:

- a. Detected beam scans.
 - (1). Four quadrature element sums (1-12), 4 msec beams, 12-bit words, TTL compatible (4 ea., DA15S).
 - (2). One, full element sum (1-48), 4 msec beams, analog, low impedance (coax) (also displayed on TBR).
- b. Undetected beam outputs.
 - (1). One, full element sum (1-48), 1024, 4 μ sec samples/beam, 12-bit words, TTL compatible (1 ea., DA15S) (also internally formatted for writing every 16th beam, on magnetic tape).
 - (2). Same as above for FFT, but interfacing yet to be determined.
- c. 4 μ sec and 4 msec clocks, TTL compatible (coax).

GENERAL

- 1. Input power: 115VAC, 60Hz, 40 amps. 4.6 kW
- 2. Size: 1-3 rack bay - 6'3" X 5'3" X 2'4" plus wheels.
1-1 rack bay - 6'3" X 2' X 2'4" plus wheels.
- 3. Weight: 3 rack bay - 2000 lbs.
1 rack bay - 500 lbs.

Cherry

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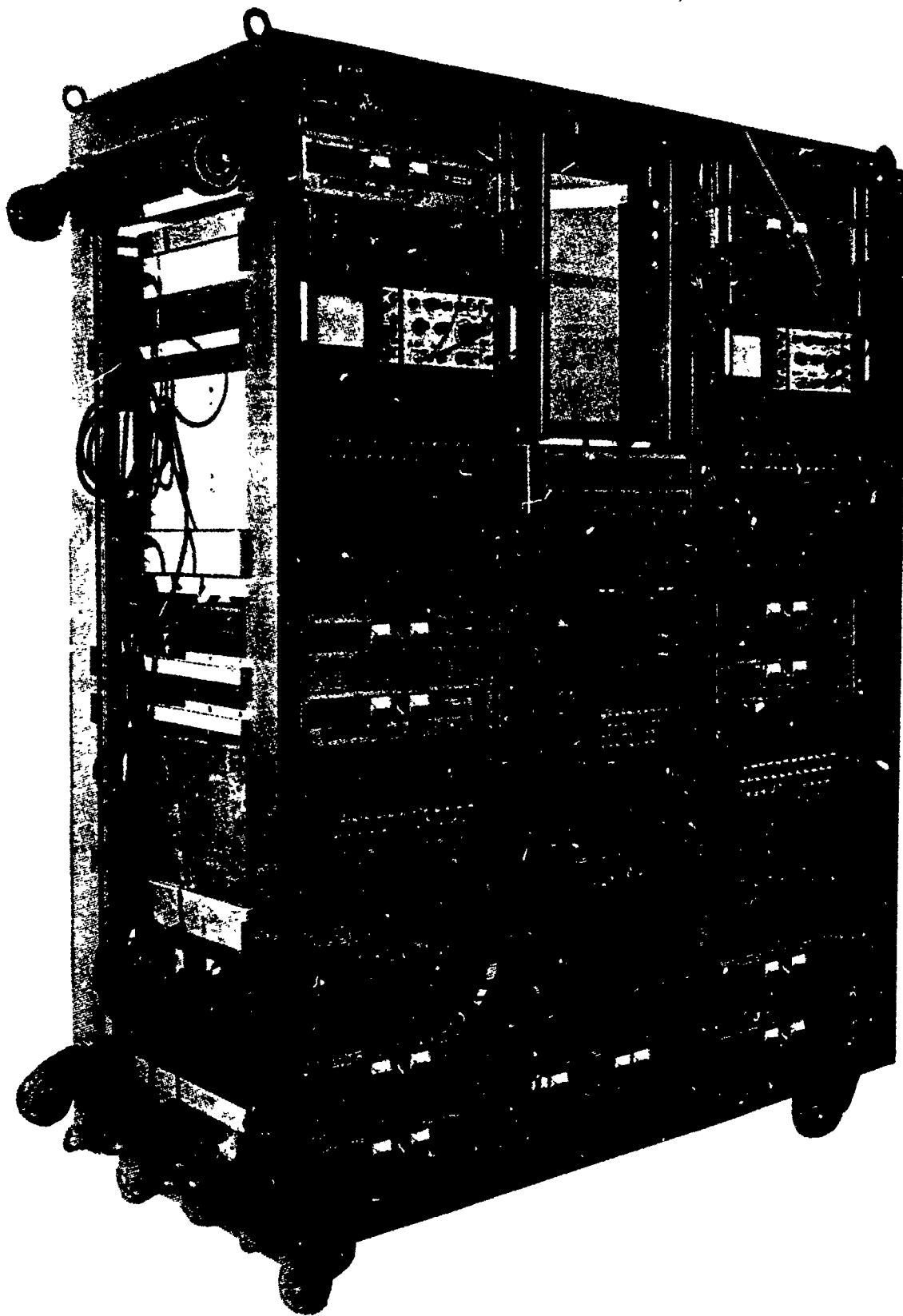


Figure 1. LRAPP Beamformer Equipment

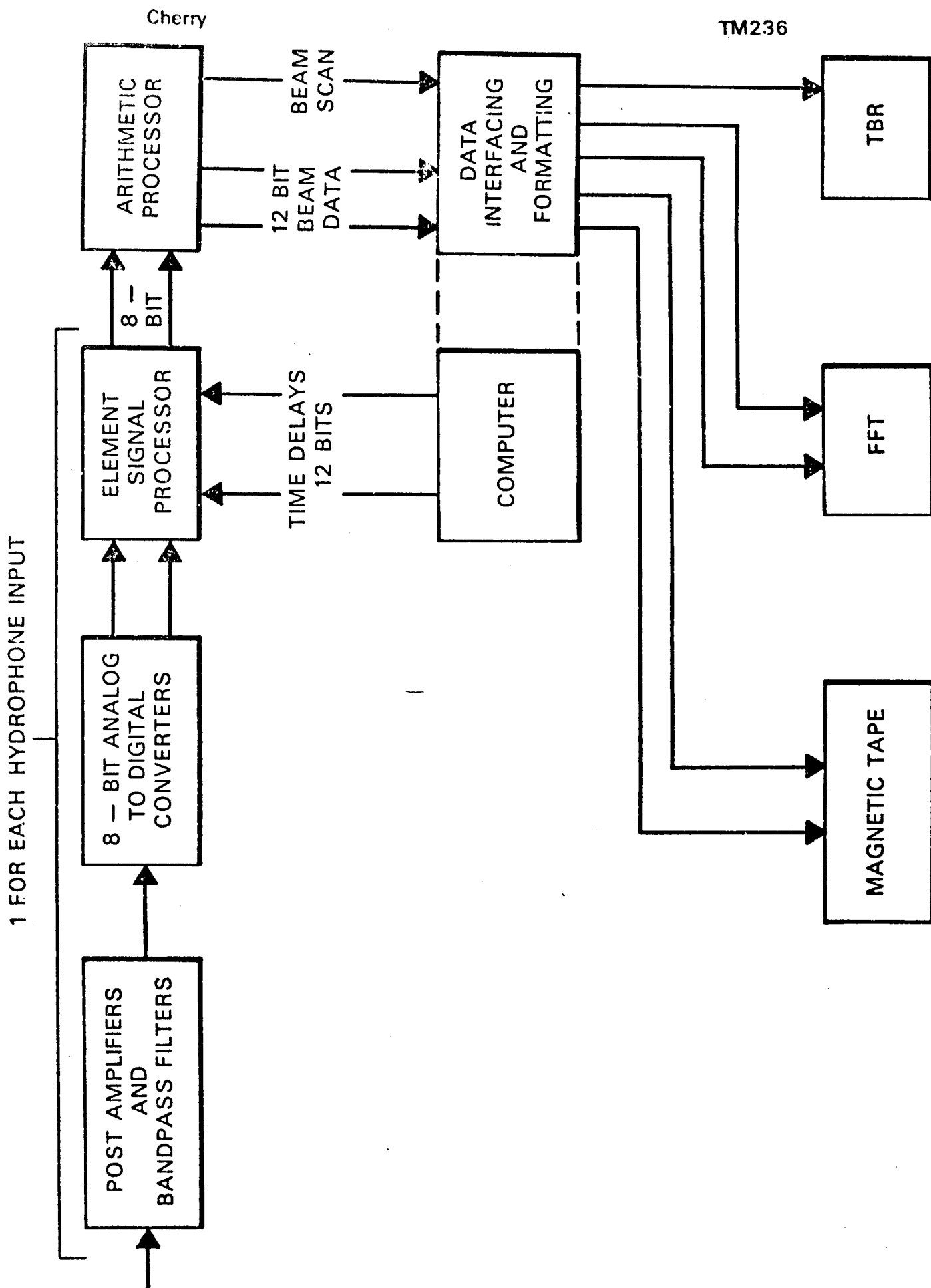


Figure 2. LRAPP Beamformer

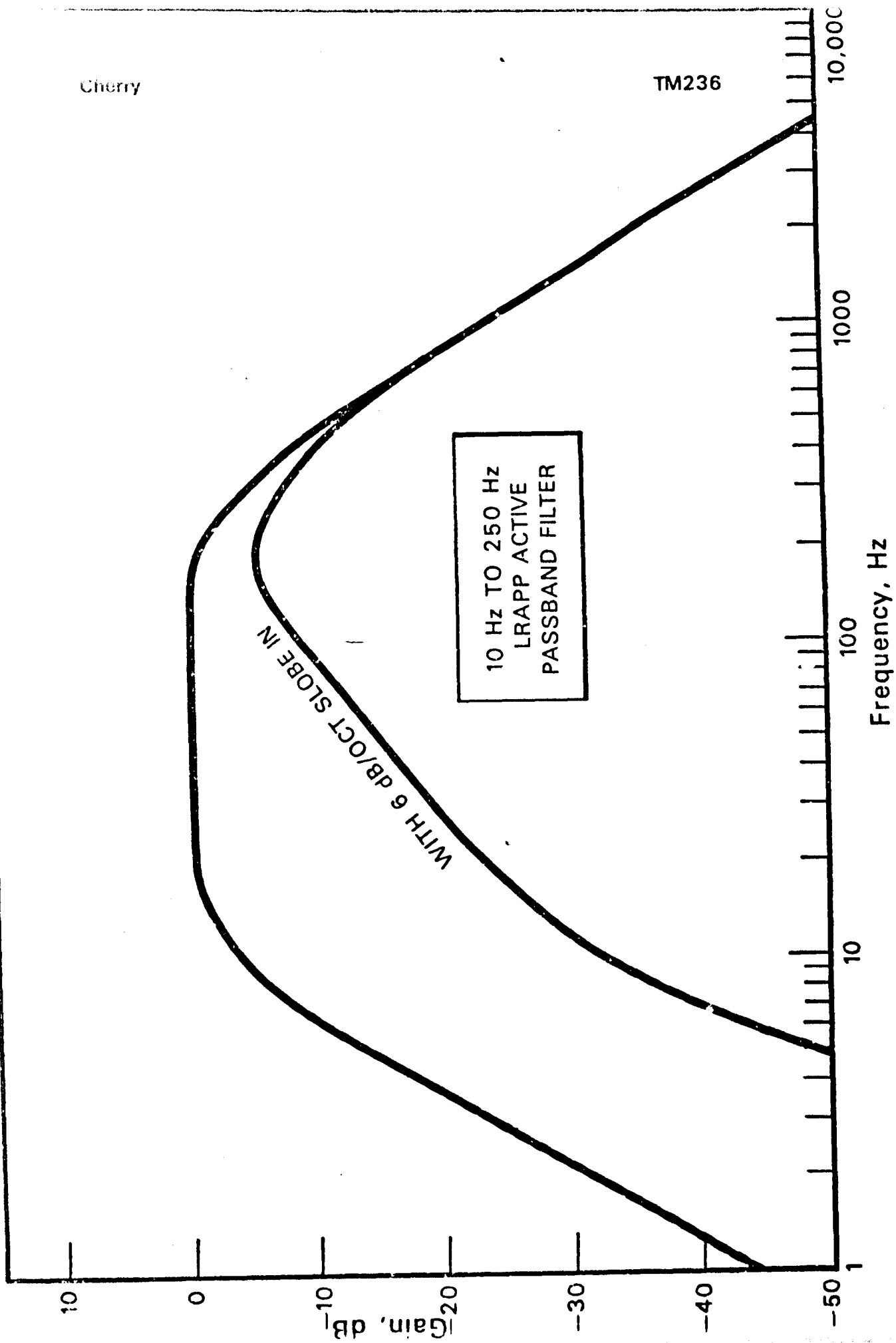


Figure 3. LRAPP Active Passband Frequency Response, 10 Hz to 250 Hz.

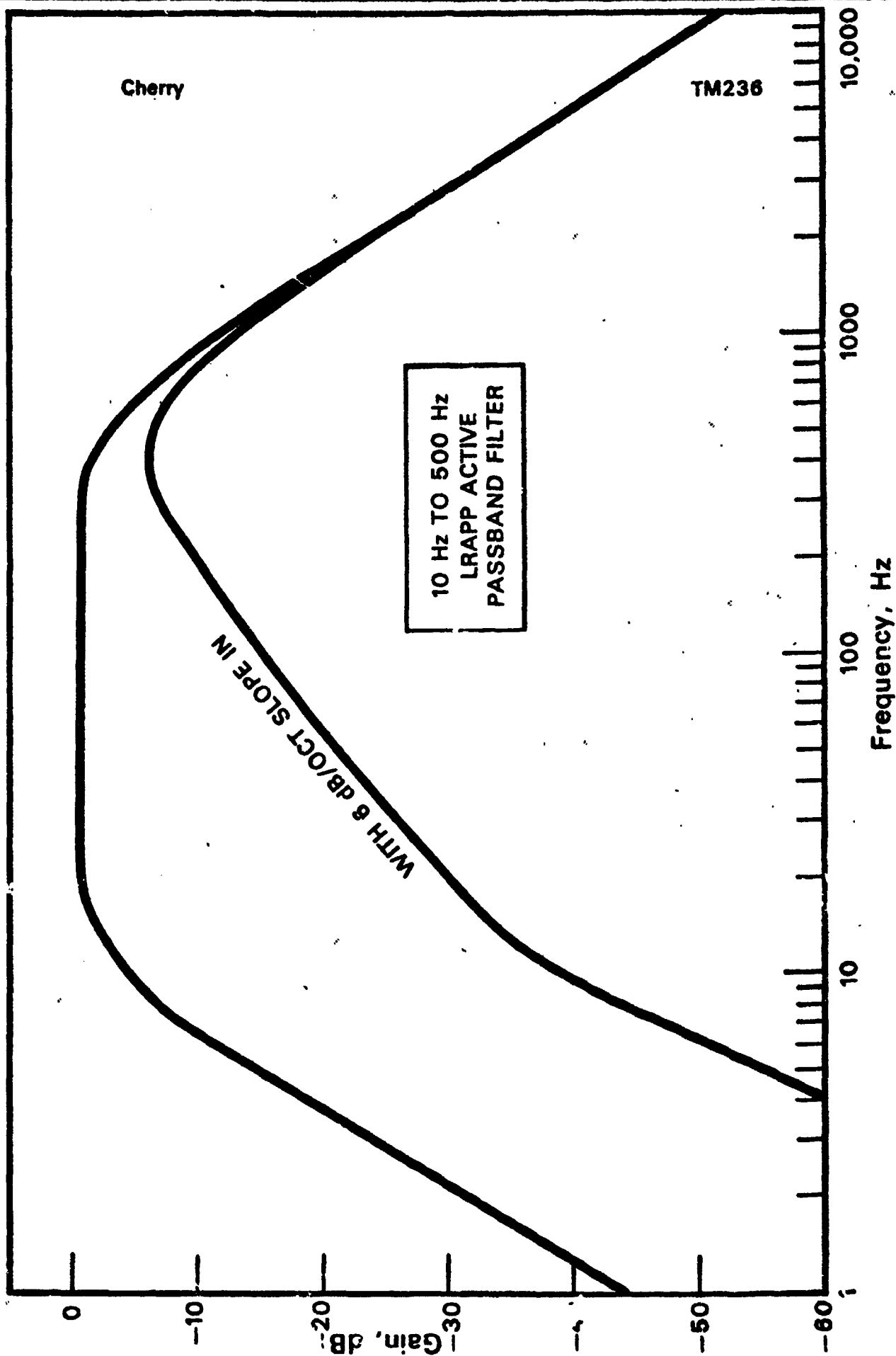


Figure 4. LRAPP Active Passband Frequency Response, 10 Hz to 500 Hz.

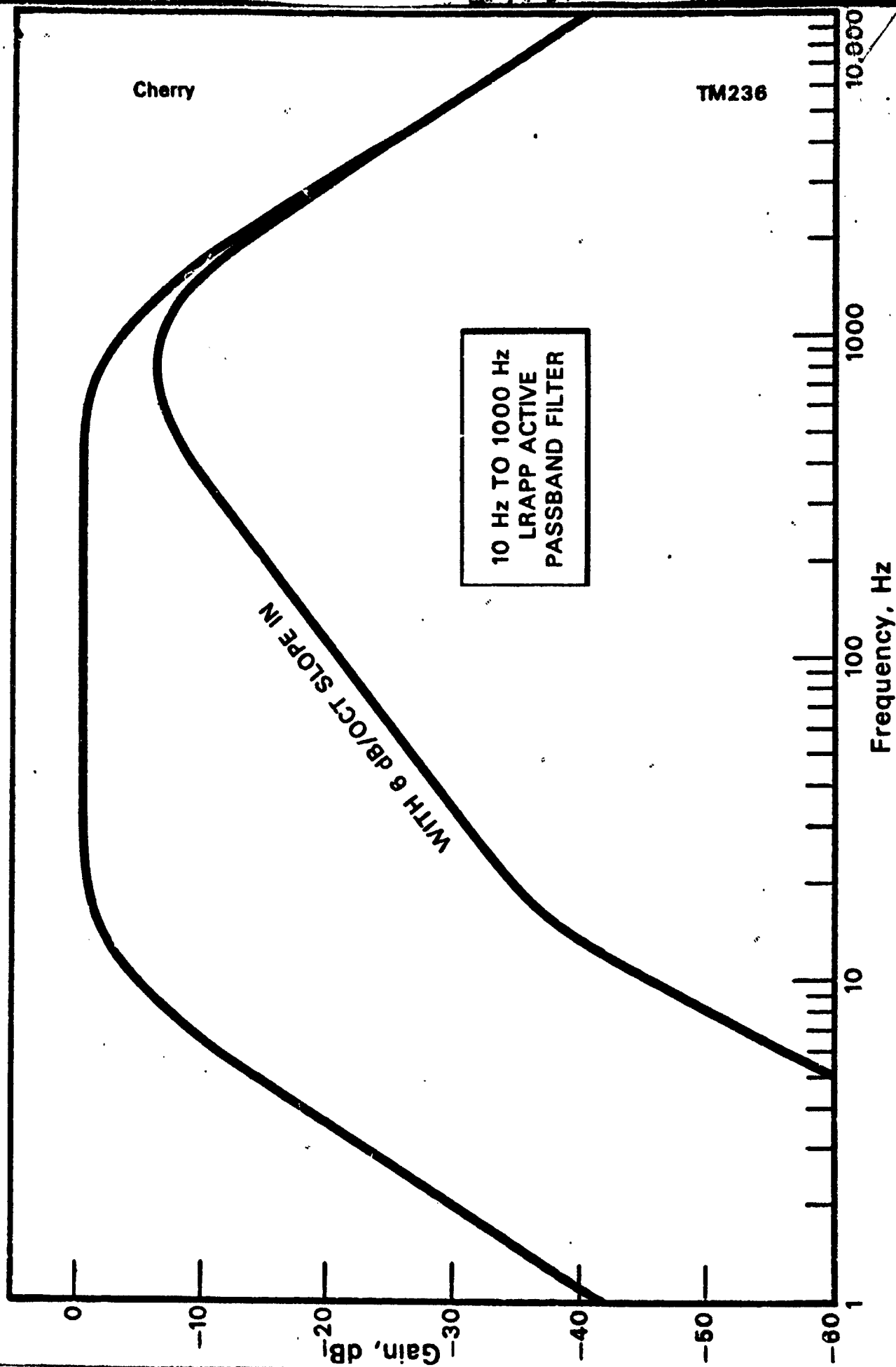


Figure 5. LRAPP Active Passband Frequency Response, 10 Hz to 1000 Hz.



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MC-011 VOL. 13	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME XIII. AREA 4B SUMMER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0916610; ND	U
MCR008	Goodman, R. R., et al.	THE NEAT 1 EXPERIMENT (U)	Maury Center for Ocean Science	721001	NS; ND	U
Unavailable	Cherry, W. R.	LRAPP BEAMFORMER	Scripps Institution of Oceanography Marine Physical Laboratory	721015	ADA081876	U
ONR ACR-186	Gregory, J. B.	PROJECT LRAPP TEST BED- TECHNOLOGY USED IN THE DEVELOPMENT OF A DEEP-OCEAN STABLE PLATFORM (U)	Office of Naval Research	721024	AD 052-3370 AD0803370 ; ND	U
MC-010	Unavailable	CHURCH GABBRO EXERCISE PLAN- LRAPP (U)	Maury Center for Ocean Science	721026	ND	U
WHOI-72-87	Daubin, S. C., et al.	THE ACODAC SYSTEM	Woods Hole Oceanographic Institution	721101	AD0756628; ND	U
NRLR7516	Fleming, H. S., et al.	PROJECT NEAT 1 ENVIRONMENTAL DATA REPORT (U) (USNS J.W. GIBBS)	Naval Research Laboratory	721129	NS; ND AD 52-3374	U